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Final Project Report

Village-Based Seed Enterprise Development in Afghanistan

Reporting Period: November 2003-June 2006

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International Centre for Agricultural Research in the Dry Areas (ICARDA)
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PROJECT DIGEST

1. Job Order Number 7

2. Implementing Agency and Contact: International Center for Agricultural Research in the Dry Areas (ICARDA)

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3. Contract Line Item Number (CLIN 2): Agricultural Technology and Market Development

4. Reporting Period: Three years commencing November 2003-June 2006

5. Total Project Budget: **US$ 1,928,063**

6. Summary of Project Activities and Impact:

6.1 Institutional introduction

ICARDA (International Center for Agricultural Research in the Dry Areas) is one of 15 centres supported by the CGIAR. ICARDA's mission is to improve the welfare of poor people through research and training in the dry areas of the developing world, by increasing the production, productivity and nutritional quality of food, while preserving and enhancing the natural resources base. ICARD serves the entire developing world for the improvement of lentil, barley and faba bean; all dry area developing countries for the improvement of on farm water use efficiency, rangeland and small ruminant production; and the west and central Asia and North Africa (CWANA) region for the improvement of bread and durum wheat, chickpea, pasture and forage legumes, and farming systems. ICARDA's research provides global benefits of poverty alleviation through productivity improvement integrated with sustainable natural-resource management practices. ICARDA meets this challenge through the national, regional and international agricultural research and development systems. ICARDA is the leading institution of the Future Harvest Consortium to Rebuild Agriculture in Afghanistan (FHCRAA) and is significantly contributing towards

achieving the FHCRAA goals, and also managing the FHCRAA activities in Afghanistan.

6.2 Summary and impact

The objective of this project is to establish farmer-led seed production and marketing units or Village Based Seed Enterprises (VBSEs) and enable them in helping other farmers to get rapid access to quality seed of most adapted (local and improved) crop varieties in Afghanistan. The rationale is that such efforts will facilitate the process of farmer to farmer diffusion and use of improved genetic material, increase and diversify crop productivity to support viable rural economies while contributing to the restoration of food security and enhancement of farm income in rural households. In full integration with RAMP's complementary market development initiatives, the following deliverables (Table 1) have been achieved during the three years of implementing the project:

- Following initial assessment and in-depth discussions with groups of progressive farmers who have shown willingness and interest in seed production in Afghanistan, twenty one (21) VBSEs were successfully established and developed in 21 districts of the target provinces of Ghazni, Helmand, Kunduz, Nangarhar, and Parwan. Each VBSE comprised a group of 10 to 15 progressive farmers to whom ICARDA provided initial seed stock of the best locally adapted varieties for multiplication and marketing. These varieties have been identified through crop evaluation trials conducted by ICARDA and FAO at the research farms of the Ministry of Agriculture and Irrigation (MAAH). Overall, the 21 VBSEs involve 254 entrepreneurial farmers who carried out all agronomic and post-harvest operations with technical assistance from ICARDA and MAAH.

- The seed enterprises have been made fully operational and profitable with a total seed production of 2,597 tons per year, based on the first two years of the project when harvesting was fully completed. At the time of this reporting (2006/07 crop season), harvesting for the current year is in progress; nevertheless, it is estimated that seed production will be higher than what was achieved in the previous two years.

- On average, each VBSE allocated more than 20 hectares of land for production of quality seed of the 4 strategic crops (wheat, rice, mungbeans, and potatoes) and vegetables (tomatoes and onions) for income diversification. The average production is 226 tons of quality seed per VBSE per year. The seed produced has been mechanically processed, packaged, tested for quality, stored and sold directly to other farmers, NGOs and other development agencies in the respective districts and beyond.

- Five (5) studies were completed: a baseline survey that assessed the status of crop yields, farm household income, crop varieties, and market conditions was conducted in the spring 2004 followed by post harvest surveys in the fall 2004 and 2005 to compare results obtained with existing baseline information. Two surveys to assess the demand for quality seed of improved varieties were also carried in 2004 and 2005 since they form the basis for the production operations of VBSE and their profitability. Results provided useful information for the VBSEs in terms of planning and management of their operations, and regarding impacts being achieved with other farmers at the community level.

- Sixteen (16) training courses were organized and benefited 606 farmer-entrepreneurs who are member of the VBSEs, extension staff of MAAH, and other stakeholders. The curriculum of the training included a broad range of subjects such as seed technology, seed enterprise operation and management, business planning for seed enterprises, seed marketing and promotion. The expectation is that farmers' knowledge and skills developed through these courses will ensure profitability of seed operations, good performance, and sustainability of the VBSEs.

- Twenty nine (29) farmer field days and field demonstrations conducted at the fields of VBSEs were completed to show the performance of quality seed of improved varieties. As a result 1,692 farmers were effectively trained while it is estimated that 2,786 farmers were reached separately through extension agents.

- During 2004-2005 cropping season alone, seventeen VBSEs collectively produced 3,916 tons of seed of wheat, rice, potatoes and mung beans. Where farmers saved their seed for next year's planting, a significant multiplier effect (i.e. increased yield) was observed that will go far beyond the lifetime of the project. Assessment of seed production capacity and profitability demonstrated a total net income of Afs 42,306,504 or $ 846,130 for all the 17 VBSES through production and marketing of seed in a single year.

- The VBSEs provided continuous flow of quality seed of desired cultivars as well as improved varieties within the mobility zone of farmers and at affordable prices. The effort enabled other farmers to raise their productions and income. It is estimated that by the end of 2006 average yields for the target crops will increase by 10 %; a total of 245,066 families or 1,960,528 individuals will benefit from the quality seed production and marketing in the five target provinces and beyond.

Table 1: Target Deliverables and Achievements (2003-2006)

Description	Target	Achievement	% of target
VBSE development	20	21	105
Quality Seed Production per VBSE (ton)	100	226	226
Total seed production per year (ton)	2000	2,597	130
Number of beneficiary families	40,000	245,066	613
Average yield increase (%)	10	10	100
Surveys (baseline, post-harvest, & seed demand)	5	5	100
Training (no. trained)	180	606	243
Field days (number)	24	29	121
Training through field days (no. farmers)	780	1,692	217
Farmers reached through extension agents	780	2,786	357
Simple business plans (no. of entrepreneurial farmers)	200	254	127

7. Tasks Completed During the Reporting Period

7.1 Establishment and Development of Village Based Seed Enterprises

One of the most pressing challenges in increasing agricultural productivity in Afghanistan was to find innovative and alternative approaches not only to breeding and selecting improved crop varieties which truly meet farmers' diverse and complex needs, but at the same time organize a low-cost production and marketing system to optimize seed delivery and diffusion of new varieties both from conventional and non-conventional breeding. The establishment of VBSEs that are farmer-led seed production and marketing units aimed at enabling these enterprises in helping other farmers to get rapid access to quality seed of most adapted (local and improved) crop varieties, facilitate the process of farmer to farmer diffusion and use of improved genetic material, which will increase and diversify crop productivity to support viable rural economies. Such an effort will contribute to the restoration of food security and enhancement of farm income in rural households in Afghanistan.

The project successfully established and developed 21 village-based seed enterprises in 21 carefully selected districts (10 in Year 1, and 11 in Year 2) in the five target provinces (Helmand, Ghazni, Parwan, Kunduz, and Nagarhar) following a series of

consultative meetings and consensus building with farming communities and other stakeholders. The first step was to select progressive farmers who are interested in taking up seed production as a business. The selection was done in an all-inclusive consultative meeting. The second step included preparing a simple business plan to assess the sustainability of the operations; it included a seed demand survey to ensure that there will be market for the seed produced by the enterprises. ICARDA provided each VBSE with initial seed from the best locally adapted varieties produced by ICARDA and FAO through crop evaluation trials, which were conducted at the research farms of the MAAH for local multiplication and marketing. Through the project, eighteen VBSEs have acquired a tractor each with 50% contribution by themselves. However, 19 VBSEs received seed cleaner, air compressor, generator and thresher. Members of the VBSEs undertook all agronomic and post harvest operations with technical assistance from ICARDA and the MAAH.

During the growing season, farmers were closely monitored and advised to ensure that acceptable seed production practices are observed so that seed of high quality is produced. The VBSEs were encouraged in using the best practices for the production of seed, i.e., the uses of recommended rates of seeds, fertilizers and pesticides and weed control measures, etc. Seed produced was field inspected, harvested and threshed mechanically, cleaned and treated with chemicals using specialized small-scale processing equipment. They also had access to seed testing and seed health testing facilities and services. The seed was then tested in laboratories for quality control, packaged, and stored safely until sowing time. Each VBSE marketed quality seed directly to other farmers, NGOs and other development agencies in their districts and beyond.

The VBSEs also participated in the evaluation of new, better yielding varieties of the most important crops grown. Varieties selected from the various international nursery programs have been evaluated within the communities where seed enterprises are based. MAAH has played an important role in the evaluation process both in trials planted at each of the research stations and in trials conducted with farming communities.

ICARDA also prepared a draft 'by-laws' for seed producers' associations that was translated in local languages. VBSEs members reviewed, finalized and adopted it during workshops organized in each target province. Copies of the by-laws were made available to each VBSE for implementation purposes. All VBSEs have been registered as legal entities with the MAAH under the cooperative law with the exception Kunduz VBSEs that are registered with Afghan Investment Support Agency (AISA). The majority of these enterprises have performed very well especially during the last two years. Yet, the main challenge is to further support them further, to develop into small private sector seed companies that provide seed of improved varieties to farming communities.

Table 2: List of 21 VBSEs established

No.	VBSE Name	Membership	Date of establishment	Province
1	Ali Abad	15	2004	Kunduz
2	Archi	13	2005	Kunduz
3	Bagram	10	2005	Parwan
4	Beshud	12	2004	Nangarhar
5	Bolan	9	2005	Helmand
6	Chardarah	10	2004	Kunduz
7	Charikar	10	2004	Parwan
8	Greshk	10	2005	helmand
9	Imam Habib	15	2005	Kunduz
10	Khan Abad	15	2005	Kunduz
11	Kwaja Omary	9	2004	Gazni
12	Kama	16	2004	Nangarhar
13	Jabal Seraj	10	2004	Parwan
14	Khewa	9	2005	Nangarhar
15	Qarnbagh	12	2004	Ghazni
16	Nana-e-Barakzai	10	2005	helmaqnd
17	Nad Ali	10	2005	Helmand
18	Markaz	14	2004	Kunduz
19	Khugyani	10	4005	Nangarhar
20	Surkhrud	20	2004	Nangarhar
21	Markas Ghazni	10	2005	Ghazni

7.2 Training and Capacity Building

A major component of this project was the development of the human resources for farmers to be capable of running seed enterprises. At the same time professionals from MAAH were trained in providing appropriate support to the enterprises and extension services to farmers. A total of 606 farmers and extension staff from the

MAAH have been trained in the 16 training courses conducted. Training courses were conducted at regular intervals throughout the years, focusing on technical aspects of production and quality control (seed selection, planting, rouging, inspection, cleaning, storage and testing), business planning, marketing, financial management, record keeping, and enterprise management. Specific training components of the courses included:

7.2.1 Seed Production Technology and Enterprise Management: A Train-the-Trainer Course, 16-24 February 2004, Kabul

The purpose was to train staff from support-providing institutions (Ministry of Agriculture, Development Agencies, NGOs, etc) to acquire knowledge in seed technology and enterprise management to enable them provide support and guidance for establishing and operating local small seed enterprises with farmers. A total of 41 participants attended the course. The course was participatory in nature including a mix of introductory lectures, practical sessions and exercises on seed technology and financial management issues. Working group discussions were structured along four themes: (a) farmers' local knowledge in seed selection and management; (b) crop specific guidelines for quality seed production under the VBSE scheme; (c) opportunities and challenges in establishing and operating VBSE; and (d) technological and institutional support required for operating VBSE.

7.2.2 Seed Production Technology and Enterprise Management, Jalalabad (18-20 May 2004) and Kunduz (26-27 May 2004)

Two follow-up courses were organized to train farmers and district agricultural extension staff to acquire knowledge in seed production and enterprise management to operate small seed enterprises at the local level. A total of 53 and 47 participants in Jalalabad and Kunduz respectively, attended the courses. Participating farmers came from Baghlan, Ghazni, Helmand, Kapisa, Kunduz, Nangarhar Parwan and Takhar provinces. The courses were practical-oriented and focused on simple and illustrative guidelines relevant to the needs of potential farmers to be engaged in small-scale village based seed enterprises. The course included introductory lectures, practical sessions on seed technology and exercises on financial management for establishing and operating a sustainable small-scale seed enterprise. The working group discussions were focused on a questionnaire developed to assess constraints and challenges in establishing, operating, and managing VBSE.

7.2.3 Legume Crop Improvement and Management, Kunduz (24-27 May 2004)

A special training course was held on food legumes to train the research and extension staff in food legume crop improvement and management. A total of 21 trainees and three ICARDA personnel participated in the course. The course included the importance of food legumes in the dry land farming systems, breeding methods for improvement of food legumes with specific reference to biotic and abiotic stresses, and various production and integrated crop management techniques. Field visits were organized to jointly evaluate the food legume crops for the agronomic traits and disease reaction.

7.2.4 Quality Assurance and Seed Processing Course, Jalalabad (19-21April 2005) and Kunduz (24-26April 2005)

These training courses have been organized for three specific purposes:

- To provide the members of the operational VBSEs with skill refreshment on the technical and managerial aspects of quality seed production.
- To catalyze dialogue and exchange of experiences among members of different VBSEs from various provinces as well as between VBSE members and relevant institutions of MAAH (Agriculture Research Institute, Improved Seed Enterprise, Extension Department, and Agriculture Cooperatives), FAO experts and NGO staff.
- To monitor technical and managerial problems encountered by different VBSEs in order to collectively discuss and seek practical solutions for them.

A total of 104 participants working with the MAAH, ICARDA, FAO, NGOs, VBSE members from major crop production districts of Baghlan, Bamian, Ghazni, Herat, Kabul, Kunduz, Helmand and Nangarhar, Parwan and Takhar provinces attended the two courses.

7.2.5 Assembling, Testing, Operation and Demonstration of Seed Processing Machines, Kabul (24 June - 7 July 2005)

Within the framework of the project, 15 seed cleaning machines equipped with all the necessary features to upgrade the quality of seed produced by the small scale-seed producers have been purchased from DARBAS Company in Syria. A comprehensive practical training was organized for VBSE member farmers on assembling, testing and demonstration of the cleaning and treating machines led by the manufacturer of the machines (Darbas Company) and Seed Unit staff. Three participants from the ICARDA Village Based Seed Enterprise supervisors and 7 representatives from the VBSEs participated in the assembling, testing, and operation of the machines. An operation

manual in English was provided for translation into local Afghanistan languages for ease of reference and use of the machine.

7.2.6. Training in Enterprise Management and Seed Marketing (2004-2006)

A total of 9 training sessions were organized in alternate locations in the five provinces. Together, 351 trainees (Table 3) that include VBSE members, NGO and MAAH benefited from these trainings which covered the following modules.

7.2.6.1 Record Keeping

Efforts were made to improve the record keeping of the VBSEs. To continue as profitable business enterprises, the VBSEs must keep accurate financial records which help them make management decisions and measure performance and value development. Given the limited knowledge of formal accounting procedures by the members, it was deemed necessary to initiate the process of records keeping at farm level without burdening the enterprises with complicated accounting systems. After discussions with the leaders of VBSEs, a simple record keeping document was designed and translated into local languages for use by VBSEs. The content covers VBSE references (name, date of creation, address, name and title of members, land holding, machinery, equipment and other assets holdings), production records (crop season, seed plots number, crop variety sown, date of planting, land area, date of harvesting, and quantity of raw seed produced), disbursement records of expenditures (on production, processing and marketing: date of transaction, item description, unit, unitary cost, total disbursement), processing records (date, crop variety, quantity of raw seed, duration of processing, quantity of quality seed and of rejects), sales record (date of sale, item sold, number of units, unit price, sales' revenue and a column for customer information and other details) regarding the operation. The training sessions explained in details the content of the record book and how it could be used. Each item was discussed and clarified to the participants followed by group discussions and gathering of feedbacks.

7.2.6.2 Seed Business Management and Financial Analysis

The training focused on the use of information from the record books for profitability assessment and to make sure a seed enterprise is achieving its goal and address issues

of cash flow management to ensure sufficient funds are available to pay timely for seed operations, new capital acquisitions, principal and interest repayments on loans, and depreciation of fixed assets. Discussions that followed centred on (1) how VBSE members provide funds currently for seed operations, (2) how common assets (e.g. seed cleaner, tractor, and thresher) are managed, (3) establish an internal mechanism for remunerating members who hold specific responsibilities and to assure the financial sustainability for each VBSE as a unit. So far, financial management style differs from one VBSE to the other and will ensure sustainability over time. VBSEs are to some extent saving money towards the acquisition of farm equipment, investing in other options for business diversification, and providing financial assistance to members in need. Support to these VBSEs to improve enterprise and business management skills, and adoption of financial practices that would ensure sustainability of operations need to be continued.

7.2.6.3 Promotional Activities and Seed Marketing

This module focused on media and tools to be used in seed advertising (newspaper, rural radio, television, posters, sign boards, bagging design with specific brand name (identity logo), sales promotion (free samples distribution, seed exchange, fairs, price reduction, field demonstration, organized group discussions), and public relations (press release, community relations, sponsorship). The feasibility of carrying out these activities in the local context of each district was discussed in subsequent sessions. It appears that VBSE members do not see the need to engage in intensive seed promotional activities beyond the use of logo-printed bags, especially if they are to pay for the promotions. Therefore, the project team worked with VBSE members to design logos that will be stamped on seed bags to create a “brand image”.

7.2.6.4 Simple Business Plans Development

A business plan is the road map for an enterprise and the project supported VBSEs in the preparation of such plans. The VBSE representatives and other members participated actively in the preparation of these documents in the second and third year of the project. During the first year, business plans were prepared for the six VBSEs which they used them in conducting their operations. To speed up the preparation of business plans and other important sustainability issues during the second year, a consultant has assisted the project team from June 12 to August 9,

2005. In addition to the preparation of business plans for all 21 VBSEs, the consultant prepared the following documents: (a) bylaws for trade association (the Afghanistan Association of Seed Enterprises - AASE), (b) publication to assist in educational promotion of farmers (promoting good seed use), and (c) guidelines for seed enterprise management (simple procedures for operating a successful enterprise). The project team initiated this exercise with VBSE members in May 2006 for business plans to be ready for the next planting season in October 2006.

7.2.6.5 Workshops to Formalise VBSEs as Legal Entities and for Sustainability

Workshops were organized in Ghazni, Nangarhar, Kunduz and, Parwan in May 2006 to discuss sustainability issues of VBSEs mainly, the content of enterprise by-laws, rules, regulations, and management of physical and financial assets. Following these workshops, the VBSE members approved and adopted the by-laws after reviewing it. These by-laws were made available in local languages to each VBSE for implementation purposes. All VBSEs are registered as legal entities under the law of cooperative of the MAAH with the exception of four VBSEs in Kunduz, where they will be registered with the Ministry of Commerce (AISA), based on their request. Some recommendations to ensure sustainability are:

- Government must establish and implement a legal system to create legal entities like enterprises, partnerships, etc. VBSEs should become legal entities as soon as possible to obtain credit and loans to enable them having a permanent staff, operate with partner-farmers, and maintain operations and equipment.
- an 'Association of Afghan Seed Enterprises (AASE)' should be formed to maximize the potential public image and political influence of the VBSEs. This would enable the VBSEs to negotiate with government and the public as a group, and thus have a strong voice in getting needed legislation and government actions.
- A strong agricultural extension technology transfer system is a priority necessity.
- Government must establish seed policy/law implementing agencies which must be independent of research, extension and production.

7.2.6 Farmers' Field Demonstrations

Farmers' field demonstrations were conducted in collaboration with RAMP Job Order # 08-00 (Demonstrating New Technologies for encouraging the adoption of improved technologies by farmers). Twenty nine farmer field days and field demonstrations conducted at the fields of VBSEs were completed to show the performance of improved varieties and quality seeds. As a result 1,692 farmers effectively trained while it is estimated that 2,786 farmers were reached separately through extension agents.

Table 3: Training and Capacity Building Activities, Locations, Dates, and Participants

No.	Course title	Schedule	location	Participants
1	Train-The-Trainer Course in Seed Production Technology And Enterprise Management	26 February 2004	Kabul	41
2	Follow up Train-The-Trainer course on Seed Production Technology and Enterprise Management	18-20 May, 2004	Jalalabad	53
3	Follow-up Course on Seed Production Technology and Enterprise Management	25-27 May, 2004	Kunduz	47
4	Quality Assurance and Seed Processing Course	19-21April 2005	Jalalabad	53
5	Quality Assurance and Seed Processing Course	24-26 April 2005	Kunduz	51
6	Assembling, Testing, Operation and Demonstration of Seed Processing Machines	24 June to 7 July 2005	Kabul	10
7	Financial Management of Small-scale Seed Enterprise	11-12 Dec 2004	Jalalabad	64
8	Financial Management of Small-scale Seed Enterprise	14-15 Dec 2004	Parwan	63
9	Business Planning and Profitability Assessment	22 Jun - 3 July 2005	Kabul	45
10	Record Keeping, Financial Management, Seed Marketing	10-11 Dec 2005	Jalalabad	60
11	Record Keeping, Financial Management, Seed Marketing	14-15 Dec 2005	Kunduz	48
12	Business Planning and Management, VBSE by-laws, Sustainability	2-5 May 2006	Jalalabad	20
13	Business Planning and Management, VBSE by-laws, Sustainability	8-10 May 2006	Kunduz	18
14	Business Planning and Management, VBSE by-laws, Sustainability	14-17 May 2006	Parwan	9
15	Business Planning and Management, VBSE by-laws, Sustainability	23-26 May 2006	Ghazni	9
16	Business Planning and Management, VBSE by-laws, Sustainability	25-26 May 2006	Helmand	15

	Total			**606**

7.3 Market Surveys, Needs Assessments, Monitoring and Evaluation

7.3.1 Baseline Survey in 2004

To collect information on crop varieties and management practices, a baseline survey was carried out in the five target provinces, covering 27 districts. The main objective of the survey was to determine benchmark indicators against which project achievements can be measured. The survey also provided important information regarding constraints to the adoption and diffusion of improved technologies and practices. In the first stage, a random sample of 81 villages (12%) was selected out of a total of 675 villages. Each district was divided into three clusters and one village from each cluster was randomly selected. In the second stage, one fifth of the farm households was selected and interviewed. On average 50 households per village were sampled, including a total of 810 farmers. The results related to seed are summarized below.

Mostly the younger generation was involved in farming whose experiences are limited. There is wide spread illiteracy among farmers. The extending family tradition is still prevailing with the elders maintaining their important role in the community affairs. There are less job opportunities and the farming includes the main source of income. The common farming system, which includes both crops and livestock, is largely based on land ownership. In comparison to other crops, wheat is considered a strategic crop, which, highly contributes to food security followed by tomatoes, rice, onions and potatoes. Yields of all the above crops are very low as a result of which, a small amount of surplus production is marketed. Ownership of farm machineries and equipment is low and even access to them on rental basis is very much difficult. Therefore, in comparison to hired labour a higher ratio of family labour is involved in farming different crops.

In line with the lower yield of different crops per jerib of land, there has been a lower level of understanding about seed rate and application of urea and DAP in different crops. With the exception of wheat, the availability of improved seeds and access to them is very poor. Although the yield of improved seeds is promising and there is

remarkable access to extension and advisory services, yet the majority of farmers are unaware of the sources of improved seeds and their relative advantage as compared to local seeds. Of farmers using improved varieties, more than half indicated that expectations were met. Unavailability of improved seeds, lack of awareness about the improved seeds and lack of resources include the main reasons for not adopting the improved seeds.

Local market is mainly used for marketing purposes with no organized marketing information system capable of providing valid information. Accordingly there is a lack of improved storage facilities both for seeds and grains for marketing different agricultural produce with benefit accrue to the farmers. In order of importance the main pests affecting crops production include rust, bunt, worms, sun pest, thrips, grasshoppers and aphids. However, the main factors limiting crops production include distance from the market, a higher transportation cost, rough roads, a lower price, and unavailability of storage facilities and lack of agricultural cooperatives.

7.3.2 Seed Demand Surveys (2004/05)

A study was conducted to assess demand for quality seed of improved varieties as part of monitoring the impacts of VBSEs in their communities, and to identify constraints to diffusion and adoption of improved seeds. It found that awareness of the existence of improved varieties of wheat, not for other crops, is widespread among farmers amid some variations across provinces. The majority (75%) of respondents used farmer-saved seeds which are not necessarily local or non-improved seeds because many improved varieties, particularly wheat, were introduced in Afghanistan over the years. These seeds being not hybrids, farmers continued to save and use preferred ones. On average, the effective demand for improved seed per farm household is estimated at 117 kg for wheat seed, 80kg for rice and 10kg for mung bean seed. There is a potential for increasing demand more than 100% for wheat and rice seeds, triple that of mung bean, and 79% for potato seed. The average prices farmers have indicated they are willing to pay for improved seed are lower than current prices, ranging from 7% lower for potato, 11% for wheat, 14% for rice to 34% lower for mung bean.

Given the relatively wide margin below current prices at which farmers are ready to purchase seed, it is not expected that demand for seed will increase tremendously in the cropping year unless sales prices decrease. The implication is that efforts by VBSE that supply other farmers with quality seed need to focus on reducing production and processing costs that will allow them to sell seed at low prices. In terms of marketing strategy it implies that VBSEs may have to relinquish from the current competitive pricing practice of selling seed with a margin between 15 to 50% above grain prices, or at least revise their margin downward. There is an urgent need to create awareness about the existence and availability of improved seed of crops other than wheat through promotional activities.

7.3.3 Post Harvest Surveys (2004/05)

The surveys found that mostly the younger generation is involved in farming with mostly 64% illiteracy rate. Extended family pattern is very common. There are less job opportunities and the farming includes the main source of income. The most common farming system includes both crops and livestock, which is largely based on land ownership. Wheat as a strategic crop highly contributes to food security followed, by potatoes, tomatoes, onions, mung beans and rice. In order of importance the irrigation sources include canal, rainwater, karez and deep well. In general 9 irrigations are given to rice, potatoes, onions and tomatoes while 4 to 6 to wheat and 2 to 3 to mung beans.

The average wheat yield was reported to be between 350 to 450 kg, rice 500 to 800 kg, mung beans 50 to 100 kg, potatoes, tomatoes and onions each 500 to 1000 kg per jerib. The purpose of wheat and potatoes cultivation is mainly food security. Different rates of urea and DAP are used, which mainly range from 25 to 50 kg per jerib in wheat farming. In maximum 28% of the respondents have access to improved seeds of wheat, 15% to potatoes, 13% each to mung beans, tomatoes and onions and 9% to rice. Although the majority of the respondents (55%) are aware of the availability of improved seeds, they were not able to adopt them due to the lack of financial resources.

In order of importance the main pest encountered in crops production were aphids, rust, thrips, worms and sunnpest. Moreover, the main factors limiting crops production included a higher input cost, limited market, lack of modern storage, limited transportation facilities and drought. The common marketing channels included local market, on the farm and direct consumer. However, the main problems of marketing agricultural products include lack of storage facilities, low prices for the products, and high transportation costs. With the exception of wheat the availability of local storage facilities for seeds of other crops has been very limited.

7.3.4 Seed Demand Surveys (2005/06)

Seed demand surveys for quality seed of improved varieties were also carried out during 2005 to determine the demand for improved seeds on the basis of which production operations of VBSE and their profitability can be adjusted. The main findings are that mostly the younger generation of farmers is involved in farming with mostly 75% illiteracy rate. Extended family pattern is very common. There are less job opportunities and the farming. The most common farming system includes both crops and livestock, which is largely based on land ownership. In order of importance the main crops in terms of land being allocate to them include wheat, rice, tomatoes, mung beans, potatoes and onions in the five provinces. The majority of the respondents (65%) have used improved seeds in the past, but the majority of the respondents (57%) were of the opinion that improved seeds are not available during the planting season. This why, the demand for the improved seeds was 95% in the five the provinces. It can be substantiated by the higher amount of land allocated to improved cereal crops varieties in the districts surveyed. The demand was particularly evidenced in the case of potatoes in comparison to tomatoes and onions.

On the basis of priority the main production problems included a higher seed prices, low seed supply and poor purchasing power of the farmers. Unavailability of credit was considered a main problem. The great majority of the respondents (84%) expressed the role of credit in encouraging farmers to buy improved seeds and almost all the respondents were of the opinion that there is no reason for not using credit. There has been greater awareness on the improved seeds of wheat followed by onions, tomatoes, potatoes, munbeans and rice. Local market followed by ICARDA reported

to be the main sources of seed. In general the price of improved wheat and potatoes seeds was higher Afs 2 per kg than that of local seeds.

7.3.5 Post Harvest Surveys (2005/06)

Mostly the mid age farmers are involved in farming with mostly 77% illiteracy rate. Extended family pattern is very much common. There are less job opportunities and the farming includes the main source of income. The most common farming system includes both crops and livestock, which is largely based on land ownership. The majority of the farmers know the existence of VBSE. In order of importance the main crops include wheat followed by potatoes, onions, mung beans, tomatoes and rice.

In order of importance the sources of income include crops, livestock, apricot, apples, grapes and government jobs. Canal, rainwater, deep well and karez included the sources of irrigation. In general 9 irrigations are given to rice, potatoes, onions and tomatoes while 4 to 5 to wheat and 2 to 3 to mung beans.

The average wheat yield reported to be between 350 to 450 kg, rice 500 to 800 kg, mung beans 50 to 100 kg, potatoes, tomatoes and onions each 500 to 1000 kg per jerib. The purpose of wheat, mung beans and potatoes cultivation is mainly food security. Different rates of urea and DAP are used, which mainly range from 25 to 50 kg per jerib in wheat farming. Equipment ownership is very limited and most of the farmers rent the different machineries. The main source of labor included the family. The majority of the farmers use 28 to 30 kg wheat seed, 2 to 4 kg rice seed, 4 to 5 kg mung beans seed, 300 to 350 kg potatoes seed, 100 to 150 gram tomatoes seed and 0.5 to 1 kg onions seed per jerib. The majority of the respondents used 50 to 75 kg urea in wheat, 25 to 50 kg in rice, 4 to 8 kg in mung beans, 25 to 50 kg in potatoes, 51 to 60 kg in tomatoes and 31 to 35 kg in onions farming. The majority of the farmers used 25 to 30 kg DAP in wheat, 25 to 36 kg DAP each in rice and potatoes, 36 to 45 kg DAP in tomatoes and 11 to 15 kg DAP per jerib in onions in the five provinces.

Although most of the farmers were satisfied with the availability and use of improved seeds in their districts, the accessibility to improved seed was very limited ranging

from 11% to 29%. The main reasons for not adopting the improved seeds included the unavailability of improved seeds, lack of awareness about the improved seeds and lack of resources. ICARDA, NGOs, government and UN agencies considered to be the main source of seed with most access to extension and advisory services. However, sunpest, smut, cut worm and smut were the main pest affecting crops production. The main marketing channels include local market, on the farm and direct consumer and with the exception of wheat and potatoes the availability of local storage facilities for other farm products was very limited.

7.4 Performance Evaluation of VBSEs

7.4.1 Seed production

In principle each VBSE was supposed to contribute at least 20 hectares of land for seed production purposes; however, with the increase of seed awareness and demand on the part of farmers, and skills and knowledge developed by the VBSEs, the average area allocated to wheat seed production has been 32 hectares, to rice seed 5 hectares, to mung beans and tomatoes seed each 4 hectares, to potatoes seed 3 hectares and to onions seed 2 hectares per VBSE in each year. The average production per hectare of wheat seed has been 4.04 tons, rice seed 4.7 tons, potatoes 16.7, tons, tomatoes 28 tons, onions 29 tons, and mung beans 1.23 ton per hectare.

By the end of the first year 17 VBSE were established and six of them produced 1278 tons of seed distributed as follows: 753 MT of wheat and 525 MT rice seeds. In the second year, 17 VBSEs out of 21 produced 2,188 tons of wheat seed, 651 tons of rice seed, 429 tons of mung bean seed, and 887 of potato seed. This amounts to a collective production of 3,916 MT. On average, each VBSE produced more than 100 tons of wheat seed, which is the performance target at project end. In comparison with the 2003/04 cropping year (1,278 tons) the level of production represents an increase of more than four folds. Results from the third year (2005/06) are expected to be even higher in view of the number of active VBSEs. Preliminary estimates for wheat seed production is 2,725 tons, which is 725 tons more than the target. Production reports for other crops (rice, mung beans, and potatoes) will be available toward the end of the season in October when harvesting and cleaning are completed.

Table 4: Total seed produced by VBSEs (Metric tons)

Crop year	Wheat	Rice	Potato	Mung bean	Total
2003 /04	753	525	-	-	1278
2004 /05	2188	651	752	325	3,916
2005 /06 *	2,725	NA	NA	NA	NA

* Estimates; harvesting is in progress.

7.4.2 Profitability of VBSEs

Economic viability is the corner stone of the supportive efforts to VBSEs to ensure sustainability of quality seed supply. Therefore, it is obvious that almost all of the established VBSEs have profitable businesses by the end of the program in 2006. The VBSE approach is proving successful whereby a substantial amount of seed was produced and commercialized locally to farmers and organizations involved in agricultural reconstruction. Profitability of the seed operations conducted during the 2004/05 cropping year activities was assessed. The average price of wheat seed was $340, potatoes $179, rice $349, tomatoes $ 159, onions $ 49 and mung beans $426 per ton. The net marginal income from wheat seed was $ 970, potato seed $1970, $ rice seed $1641, tomato $4453, onions $4324 and mung bean seed $524 per hectare. In line with this understanding the percent marginal income from wheat was $239, potato, $193, rice $163, tomato $249, onions $280 and mung bean $190. The main reason for higher percent marginal income for wheat was the high demand created by IFDC and other NGOs.

Thus, quality seed production at community-level has proven profitable in the context of Afghanistan where demand for such seeds is high. All VBSEs did not perform equally from high prices due mainly to poor negotiation skills, inappropriate sales timing, low quality of unprocessed, and lack of certificates on quality test. The most progressive VBSE are not only tapping on the market for wheat seed but also using diversification strategies (mainly tomato and onion production) to increase and

stabilize revenues. Yet, technical supports are still needed in many areas including seed quality assurance, finance and agribusiness management skills, seed marketing and promotion. Assessment of seed production capacity and profitability of all VBSEs demonstrated a total net income of Afs 42,306,504 or $ 846,130 for all the 17 VBSES through production and marketing operations in 2005 alone. Seed production and harvesting activities are not completed in all provinces at the time of this reporting. But it is estimated that a total of 245,066 families or 1,960,528 individuals will be benefited from the quality seed production of different crops (mainly wheat, rice and food legumes) in the five target provinces during 2006 as a result of 10 % yield increase for target crops.

Table 5: Area Cultivated, Seed Production by VBSEs, and Revenues (2004/05)

Item	**Wheat**	**Potato**	**Rice**	**Tomato**	**Onion**	**Mung bean**
Number of active VBSEs	17	14	9	7	6	7
Total area (hectare)	542	45	139	25	14	264
Average area (hectare /VBSE)	32	3	15	4	2	38
Total Production (ton)	2,188	752	651	700	406	325
Average production (ton/VBSE)	129	54	72	100	86	46
Average production (ton/Ha)	4.04	16.7	4.7	28	29	1.2 3
Average price (farm gate Afs/ton)	17,000	8,946	17,460	7,952	7,455	21,300
Gross revenues (Afs /Ha)	68,680	149398	82062	222,656	216195	26,199
Production cost (average Afs /Ha)	20,205	51,000	31,190	63,850	56,870	9,025
Net average marginal income (Afs /Ha)	48,475	98,398	50,872	158,806	159,325	17,174
%Marginal income	239	193	163	249	280	190

8. Lessons Learned and Recommendations for Future Activities

1. The concept of organizing low-cost production and marketing village based seed enterprises to optimize seed delivery and diffusion of new varieties has proven feasible and effective as an alternative yet complementary seed delivery system for poor farmers in less favorable marginal areas where the formal public and private sectors are not supplying quality seed.

2. The VBSE approach provides a convenient option for poor farmers in marginal areas by decentralizing production and lowering the costs and ensuring availability and access to quality seed. These farmers did not have to travel long distances, follow a lot of formalities, and necessarily have cash in hand in order to purchase quality seed. Rather, they had the opportunity to identify crop varieties they prefer and to be supplied through trusted sources such as fellow farmer that operates seed business in the community.
3. The selection criterion and the consultative process used in the formation of groups enable cohesion among members and facilitated the sharing of assets (tractor, seed cleaner, thresher), of technical information and skills acquired during training sessions. Farmers were empowered and become leaders in addressing their own problems.

4. The capacity building and technical supports provided by ICARDA allowed most VBSE members to run seed production and marketing as an economically viable and diversified business in a complex and difficult environment.

5. Considerable impact can be made on the poor in a short time; a large number of farming households and their dependents benefited from the initiative through the use of quality seed, increased productivity, and food security.

6. The conduct of farmer field days combined with demonstration of technological packages had been instrumental in creating awareness and exposing other farmers to new varieties, thus creating market and demand for seeds produced by VBSE.

7. Based on demand assessments, farmers and communities have low valuation for quality seed or improved varieties because of low produce prices and precarious production conditions. This may undermine VBSE operations, success and sustainability over time. VBSE are thus pressured to even reduce production costs and profit margins in order to market quality seeds at affordable prices. This can be achieved only if additional support is provided in order to achieve economies of scale in seed operations.

8. The distribution of relief oriented free seed and grain by some NGOs and international organizations would undermine the efforts of developing market oriented seed enterprises and their sustainability.

9. The lack of appropriate storage facility is a major constraint to increasing the scale of seed production to meet market demand. This would facilitate adequate management of stores and marketing of seeds.

10. The VBSEs should regularly conduct seed testing in order to facilitate and ensure marketing good quality seed. The VBSEs should utilize the services of seed testing laboratories exist under the MAAH.

Most VBSEs are viable but cannot sustain their operations if technical and institutional support is terminated after few years of establishment. Despite the successes, some aspects of the technical and institutional support need to be pursued in order to develop the VBSES into more formal and sustainable business entities.

1. The capacities in terms of business organization and financial management, seed quality assurance during crop growth as well as post harvest operations need to be enhanced for the majority of members. For example, VBSEs members have different levels of business and price negotiation skills, demand assessment, market research, which affected their performance negatively. VBSEs should adopt quality assurance practices in seed production, appropriate financial management, and transparency in operation.

2. Financial management approach that could ensure sustainability and continuous flow of quality seeds in the respective communities over time differs from one VBSE to the other. VBSE members need to be exposed and trained to use other options. For example, liquidity constraints in conducting successive farming activities forced some VBSE members to sell their seed at harvest as grain, a bad sales timing which undermined their economic performance and viability. Availability of revolving fund may help VBSEs to overcome financial difficulties.

3. The concept of business planning is well accepted by VBSE members but not sufficiently used as a road map for business operation monitoring and management. The VBSE's need to prepare and use business planning, organizational, and management tools and structures. These business plans (which must embody market survey, promotion, market planning, financial planning, and operational planning)

4. Other organizations implementing similar interventions provided offices, storage facilities, and most farm and cleaning equipment required for quality seed production to their seed enterprises. This created some discrepancy with ICARDA established VBSEs and made project implementation uneasy. There is a need to increase support to VBSEs in terms of having an office, storage and other facilities for the farm equipment they own, but this should be based on long-term loan than a free gift to ensure sustainability and avoid dependency.

5. Most of the VBSEs member farmers are not ready to take on more aggressive approaches to seed promotion and marketing activities mainly because of the extra expenses they require. The VBSEs need to improve promotional activities using their seed production fields for demonstrations and field days and through local social networks.

6. VBSEs need to develop and maintain linkages with local traders and businessmen for seed marketing and the provision of production inputs from the market to their members and to other farmers. This will ensure on time farm operations and quality of the inputs available at economical prices.

7. The precarious security conditions that prevailed also worsened over time and created a stressful environment in which support was provided to VBSEs. Impact would have been greater otherwise.

VBSEs need to maintain linkages with local traders and businessmen for seed marketing and the provision of production inputs to their members and to other

farmers. This will ensure on time farm operations and availability of inputs at reasonable prices to farmers.

For successful and profitable operations, the VBSEs should diversify their activities by producing both seed of major food crops with low profit margins (e.g. cereals) with those with higher profit margins (e.g. vegetables) to ensure profitability and sustainability.

VBSEs should have easy access to credit facilities for operational as well as for capital investments. With the registration of VBSEs and by the rules and regulations adopted by each VBSE, it is most probable that the VBSEs will ensure their easy access to credit

9. Summary of Projects Relationship and Coordination with the Islamic State of Afghanistan and Appropriate Ministries during the Course of this Project

At present neither the public sector nor the private sector, exist and has the capacity or interest to provide seed to farmers in Afghanistan. The Seed Unit of ICARDA is exploring alternative approaches for seed delivery where the formal sector does not exist or by targeting farmers in less favourbale environments and remote areas by establishing a pilot VBSEs in selected communities.

1. The VBSEs are functioning in close collaboration with the Ministry of Agriculture and its associated agricultural research centres, agricultural development and its extension departments.

2. The VBSE members have access to seed quality control facilities with a complete network of modern, full-service seed testing laboratories. This is an example of technology transfer program, to teach farmers what seed quality is, and how they can be free testing at the seed quality testing labs. This helps help expand the ongoing promotion of farmer use of quality seed.

3. Seed Certification system has been established, and the VBSE's should be the first certified producers. However, Certification system is part of the MAI and the VBSEs are to make use of this system..

4. The MAI played important role in coordinating the variety evaluation process. Not only the trials e planted at each of the research stations, but MAAH also coordinated the trials conducted with farming communities.

5. The dealers, village traders, merchants and NGOs are the potential clients that will purchase seeds from the VBSEs.

6. VBSEs must link with international research institutions to obtain new germplasm resources particularly oilseeds and high value crops.

7. It will involve a range of other partners such as CIP, CIMMYT, ICRISAT, IRRI and other international organizations.

8. The VBSEs will need to coordinate with other FHCRAA projects to ensure that as far as possible activities are integrated within sites.

9.1. After the approval of the by-laws by the VBSE members, most of the farmers were quoted saying that now they have a legal status to produce seed in the districts.

9.2. Three aspects of the VBSE program that ensure program sustainability include:

- Creation of common fund to be deposited in the bank in the respective provinces.
- The income to be generated through sale of seeds of different crops, membership payment renting out equipment particularly tractors, seed cleaners and thresher, etc.
- Capacity building of the VBSEs.

10. Photographs, Human Interest and Beneficiary Stories

Agricultural equipment supplied by ICARDA to
Kama (Nangarhar) and Char Darah (Kunduz)VBSEss

Fiat Tractor- 640

Tractor Trolley

Training course in progress at Kunduz

Dr. Tony vanGestel, Head of ICARDA Seed Unit (Aleppo) addressing the participants while Eng. Siddiqui (ICARDA, Afghanistan) provides simultaneous translation in Dari and Pashto

Dr. Rajendra Malhotra, ICARDA's Principal Legume Breeder training VBSE members in chickpea seed production

An impressive field of Paddy rice (Kunduz-1) of VBSE in Kunduz

VBSEs members along with other farmers during field day at Nangarhar (above) and Kunduz (below)

RAMP representatives attending a field day in Kunduz

Members of Behsud, Kama and Surkhroud VBSEs discussing business plans
With the project team

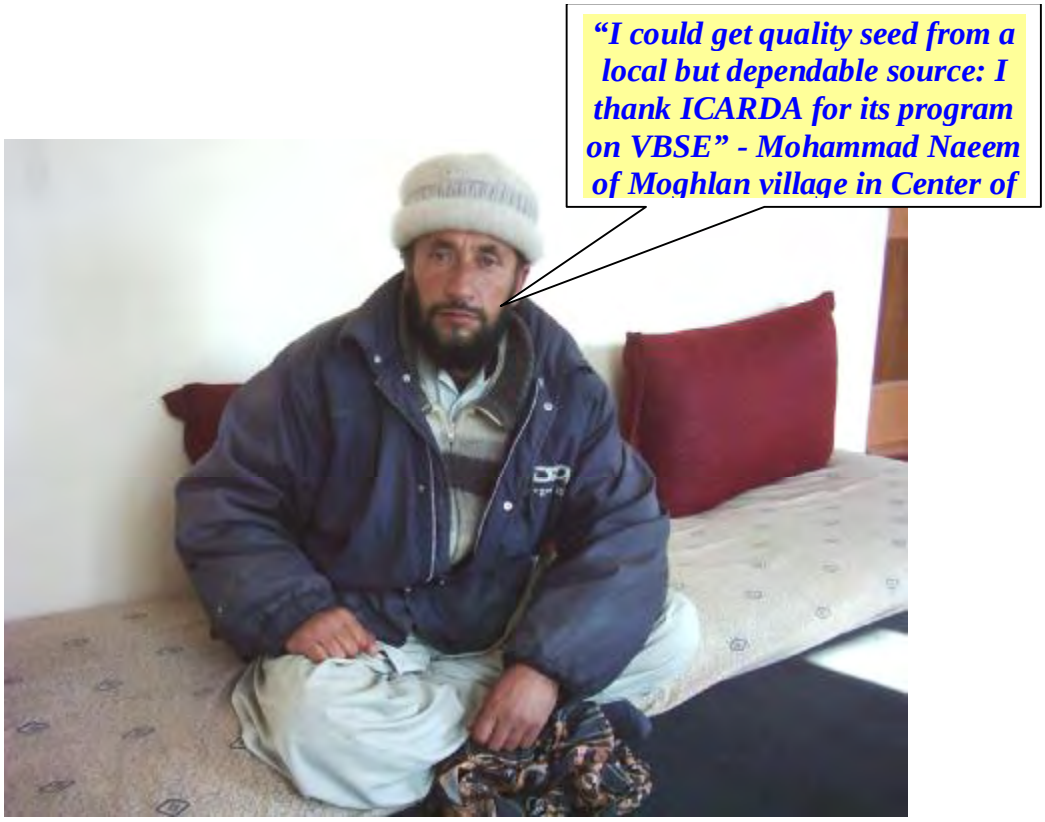
Mr. Jalal Gardezi, Advisor to the Minister of Agriculture (in grey suit)
with members of Behsood VBSE

Seed potato multiplication plot in Batikoat district (Nangarhar)

Rice seed multiplication plots of Kama VBSE

Mr. Ismail Daulatzai, Deputy Director of Agriculture, Nangarhar
Inaugurating the VBSE training

Business Management and Financial Analysis Training
In progress at Nangarhar



VBSE wheat seed multiplication plot in Nangarhar Province

Glimpses of Farmers' field day at Behsood, Nangarhar

Theoretical session of training (left) and Training on seed processing (right)

Participants are trained in variety identification

Dr. Zewdie Bishawof Seed Unit of ICARDA delivering a lecture while Eng. Shamsuddin Siddiqui of ICARDA-Afghanistan translating in local languages (left), and Dr.Abdoul Aziz Niane distributing certificates of participation to farmers (right)

Trainers and trainees at the end of the course

Mr. Rasooli and Sharif of ICARDA training
VBSE members on correct way of rouging in Greshk

Project imported heavy duty seed cleaners for each VBSE

Seed cleaners and other equipment provided to VBSEs being transported from Kabul to target provinces

A VBSE member formally receiving seed cleaner and generator from the Provincial Director of DAAHF, Nangarhar (in green waist coat)

Qara Bagh VBSE members effectively using the Seed cleaner and other equipment provided by the Project

Threshing of wheat

Threshed seed being fed in seed cleaner

Cleaned and treated seed

Seed being weighed and packed

Cleaned, treated and packed seed ready for sale

Seed cleaner in use in Kunduz

VBSE members using their seed cleaner in Parwan

Seed cleaned at Nangarhar

Project team managed to get agricultural equipment through PRT (Ghazni)

PRT Representative-Ghazni handing over the agricultural equipment to the President of Qara- Bagh VBSE

Representative of Ghazni PRT handing over the equipment to VBSE members

Book Keeping Training is in progress at ICARDA- Nangarhar

Mr. Mike Hofeburger, Agricultural Adviser to PRT-Nangarhar discussing ICARDA's over all program with Khalid Wadan of ICARDA

Trainers and trainees during seed cleaning training held in Kabul

Glimpses from the VBSE training course held in Nangarhar

Director of DAAHF, Nangarhar delivering his inaugural speech

A view of theoretical session

Question–answer session in progress

Wheat seed produced by Chardarah VBSE

Deputy Minister Mr. Sharif inaugurating
FAO-ICARDA training course on seed testing

Annex 1.

Table 1: Area cultivated, seed production by VBSEs and expected average prices (2004/05)

Item	Wheat	Potato	Rice	Tomato	Onion	Mung bean
Number of active VBSEs	17	14	9	7	6	7
Total area (hectare)	542	45	139	25	14	264
Average area (hectare /VBSE)	32	3	15	4	2	38
Total Production (ton)	2188	752	651	700	406	325
Average production (ton/VBSE)	129	54	72	100	86	46
Average production (ton/Ha)	4.04	16.7	4.7	28	29	1.2 3
Average price (farm gate Afs/ton)	17000	8946	17460	7952	7455	21300
Gross revenues (Afs /Ha)	**68680**	**149398**	**82062**	**222656**	**216195**	**26199**
Production cost (average Afs /Ha)	**20205**	**51000**	**31190**	**63850**	**56870**	**9025**
Net average marginal income (Afs /Ha)	**48475**	**98398**	**50872**	**158806**	**159325**	**17174**
%Marginal income	**239**	**193**	**163**	**249**	**280**	**190**

Table 2: Production, costs, revenues and margins derived by VBSE and by crop (2004/05)

Name of VBSE	Item	Wheat	Potato	Rice	Tomato	Onion	Mung bean	Total
Kunduz	Area (J)	210	15	100	60	2	150	537
1. ALI ABAD	Production (S)	21000	7500	11000	96000	2250	6000	143,750
	Income	2,331,000	705,000	1,535,000	7,680,000	45,000	1,440,000	13,736,000
	Seed	*2,016,000*		*1,375,000*			*1,080,000*	
	Others	*315,000*	*705,000*	*160,000*	*7,680,000*	*45,000*	*360,000*	
	Costs	1,066,643	204,414	849,200	883,080	17,820	424,050	3,445,207
	Gr-Margin	1,264,358	500,586	685,800	6,796,920	27,180	1,015,950	10,290,793
2. CENTER	Area (jerib)	420	25	300	30	30	100	905
	Production (S)	37800	9000	30000	60000	45000	5500	187,300
	Income	3,654,000	1,410,000	4,230,000	4,800,000	900,000	1,230,000	16,224,000
	Seed	*3,024,000*		*3,750,000*			*990,000*	
	Others	*630,000*	*1,410,000*	*480,000*	*4,800,000*	*900,000*	*240,000*	
	Costs	2,133,285	340,691	2,547,600	441,540	356,400	282,700	6,102,216
	Gr-Margin	1,520,715	1,069,309	1,682,400	4,358,460	543,600	947,300	10,121,784
3. KHAN ABAD	Area (J)	294	8	14	15	7	10	348
	Production (S)	26460	3600	1400	18000	3500	250	53,210
	Income	3,263,400	338,400	197,400	1,440,000	70,000	69,000	5,378,200
	Seed	*2,822,400*	*338,400*	*175,000*			*45,000*	
	Others	*441,000*		*22,400*	*1,440,000*	*70,000*	*24,000*	
	Costs	1,493,300	109,021	118,888	220,770	83,160	28,270	2,053,409
	Gr-Margin	1,770,101	229,379	78,512	1,219,230	-13,160	40,730	3,324,792
4. IMAM SAHIB	Area (J)	200	4	14	5	4	800	1,027
	Production (S)	22000	1560	10000	10000	2000	40000	85,560

Table-2 continued								
	Income	2,060,000	244,400	197,400	800,000	40,000	9,120,000	12,461,800
	Seed	*1,760,000*	*244,400*	*175,000*			*7,200,000*	
	Others	*300,000*		*22,400*	*800,000*	*40,000*	*1,920,000*	
	Costs	1,015,850	54,511	118,888	73,590	47,520	2,261,600	3,571,959
	Gr-Margin	1,044,150	189,890	78,512	726,410	-7,520	6,858,400	8,889,842
5.CHARDARAH	Area (J)	250	20	200	10	15	100	595
	Production (S)	25000	13000	32000	15000	22500	3000	110,500
	Income	2,775,000	1,222,000	4,320,000	1,200,000	450,000	780,000	10,747,000
	Seed	*2,400,000*	*488,800*	*4,000,000*			*540,000*	
	Others	*375,000*	*733,200*	*320,000*	*1,200,000*	*450,000*	*240,000*	
	Costs	1,269,813	272,553	1,698,400	147,180	178,200	282,700	3,848,845
	Gr-Margin	1,505,188	949,448	2,621,600	1,052,820	271,800	497,300	6,898,155
6. ARCHI	Area (J)	200	4	50	4	10	160	428
	Production (S)	26000	1440	6000	4800	15000	6400	59,640
	Income	2,380,000	225,600	830,000	384,000	300,000	1,536,000	5,655,600
	Seed	*2,080,000*	*225,600*	*750,000*			*1,152,000*	
	Others	*300,000*		*80,000*	*384,000*	*300,000*	*384,000*	
	Costs	1,015,850	54,511	424,600	58,872	118,800	452,320	2,124,953
	Gr-Margin	1,364,150	171,090	405,400	325,128	181,200	1,083,680	3,530,648

Table 2 cont.: Production costs, revenues and margins obtained by VBSEs and by crop (2004/05)

Name of VBSE	Item	Wheat	Potato	Rice	Tomato	Mung bean	Total
Nangarhar	Area (Jerib)	100	8	12	2	2	124
7. KAMA	Production (S)	11000	2971	1972	1600	129	17,672
	Income	1,220,000	223,120	260,400	134,000	70,800	1,908,320
	Seed	*990,000*	*169,480*	*246,000*	*128,000*	*51,600*	-
	Others	*230,000*	*53,640*	*14,400*	*6,000*	*19,200*	-
	Costs	501,600	81,004	59,921	26,593	8,283	677,400
	Gr-Margin	718,400	142,116	200,479	107,408	62,517	1,230,920
Name of VBSE	**Item**	**Wheat**	**Potato**	**Rice**	-	-	**Total**
Nangarhar	Area (J)	160	15	0.5	-	-	175.5
8. SUNKHRUD	Production (S)	32000	1500	50	-	-	33,550
	Income	3,360,000	270,750	6,850	-	-	3,637,600
	Seed	*2,880,000*	*142,500*	*6,250*	-	-	
	Straw	*480,000*	*128,250*	*600*	-	-	

Table 2 continued							
	Costs	802,560	179,108	2,497	-	-	984,164
	Gr-Margin	2,557,440	91,643	4,353	-	-	2,653,43
	Item	**Wheat**	**Potato**	**Rice**	-	-	**Total**
9. BEHSOUD	Area (J)	100	6	4			110
	Production (S)	12857	2143	634			15,634
	Income	1,411,000	193,857	76,800			1,681,657
	Seed	*1,161,000*	*102,030*	*63,600*			
	Others	*250,000*	*91,827*	*13,200*			
	Costs	501,600	62,733	19,974			584,307
	Gr-Margin	909,400	131,124	56,826			1,097,350
	Item	**Wheat**	**Potato**	**Rice**	-	-	**Total**
10. KHEWA	Area (J)	100	4				104
	Production (S)	12000	1429				13,429
	Income	1,560,000	84,686				1,644,686

Table 2 continued							
	Seed	*1,260,000*	*47,989*				
	Others	*300,000*	*132,674*			-	
	Costs	501,600	41,822				543,422
	Gr-Margin	1,058,400	90,852				1,149,252
Ghazni	**Item**	**Wheat**	**Potato**		-	-	**Total**
11. QARABAGH	Area (J)	87	18				105
	Production (S)	12180	21600				33,780
	Income	1,935,000	2,160,000				4,095,000
	Seed	*1,218,000*	*2,160,000*				
	Straw	*652,500*					
	Costs	498,836	218,790				717,626
	Gr-Margin	1,436,164	1,941,210				3,377,374

Table 2 cont.: Production costs, revenues and margins obtained by VBSEs and by crop (2004/05)

Name of VBSE	Item	Wheat	Potato	Total
Ghazni	Area (J)	90	80	170
12. KHWAJA OMARY	Production (S)	11250	52000	63,250
	Income	1,800,000	5,200,000	7,000,000
	Seed	*1,125,000*	*5,200,000*	
	Straw	*675,000*		
	Costs	516,038	972,400	1,488,438
	Gr-Margin	1,283,963	4,227,600	5,511,563
Helmand				
13. NAD-E-ALI	Area (J)	110	10	120
	Production (S)	15714	3857	19,571
	Income	2,123,000	328,100	2,451,100
	Seed	*1,573,000*	*131,240*	

	Others	*550,000*	*196,860*	
	Costs	759,275	112,200	871,475
	Gr-Margin	1,363,725	215,900	1,579,625
14. BOLAN	Area (J)	90	9	99
	Production (S)	14286	5143	19,429
	Income	1,881,000	436,815	2,317,815
	Seed	*1,431,000*	*174,726*	
	Others	*450,000*	*262,089*	
	Costs	740,025	100,980	841,005
	Gr-Margin	1,140,975	335,835	1,476,810
Parwan				
15. JABAL SERAJ	Area (J)	100		100
	Production (S)	12000		12,000
	Income	1,500,000		1,500,000

	Seed	*1,080,000*		
	Others	*420,000*		
	Costs	521,950		521,950
	Gr-Margin	978,050		978,050
16. CHARIKAR	Area (J)	100		100
	Production (S)	14000		14,000
	Income	1,680,000		1,680,000
	Seed	*1,260,000*		
	Others	*420,000*		
	Costs	521,950		521,950
	Gr-Margin	1,158,050		1,158,050
17. BAGRAM	Area (J)	100		100
	Production (S)	7000		7,000

	Income	1,190,000		1,190,000
	Seed	*770,000*		
	Others	*420,000*		
	Costs	505,450		505,450
	Gr-Margin	684,550		684,550

Annex-2

List of surveys conducted

1) Baseline survey (July 2004) 76 pages
2) Improved Technologies Adoption Rate Survey (May 2005) 30 pages
3) Post Harvest Survey (August 2005) 66 pages
4) Demand Survey (October 2005) 22 pages
5) Post Harvest Survey (June 2006) 64 pages
6) Demand Survey (April 2006) 44 pages

Attachments